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PRAXAIR, INC. LAW DEPARTMENT - M1 557 39 OLD RIDGEBURY ROAD DANBURY, CT 06810-5113			EXAMINER WARTALOWICZ, PAUL A	
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* VINCENZO SALVATORE MARRELLA,  
ALFRED JOSEPH FRANCIS II and  
GARY WAYNE FENNER

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Appeal 2008-4500  
Application 10/671,555  
Technology Center 1700

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Decided: January 15, 2009

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Before TERRY J. OWENS, LINDA M. GAUDETTE, and  
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 the final rejection of claims 1-8. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).  
We REVERSE.

INTRODUCTION

Appellants claim a method of recycling process stream condensate from a steam reforming system comprising, in relevant part, “transferring from a first part [60] of the uncontaminated superheated steam stream [20]

to the contaminated condensate stream [44], after having been pressurized, to form a contaminated superheated steam stream [58]”, combining a second part (62) of the uncontaminated superheated steam stream (20) with the contaminated superheated steam stream (58) to form a combined superheated steam stream (12), and combining at least part of the combined superheated steam stream (12) with a hydrocarbon containing stream (10) to form a hydrocarbon and steam containing process stream as a feed to the steam reformer (claim 1; Fig. 2).

Claim 1 is illustrative:

1. A method of recycling process stream condensate from a steam reforming system that produces an uncontaminated superheated steam stream and at least one process condensate stream contaminated with products of a steam reformer of the steam reforming system, said method comprising:

- collecting condensate from the at least one process condensate stream and forming a contaminated condensate stream therefrom;
- pressurizing the contaminated condensate stream;
- transferring heat from a first part of the uncontaminated superheated steam stream to the contaminated condensate stream, after having been pressurized, to form a contaminated superheated steam stream and to condense the first part of the uncontaminated superheated steam stream, thereby to form an uncontaminated condensate stream;

- combining a second part of the uncontaminated superheated steam stream with the contaminated superheated steam stream to form a combined superheated steam stream;

- recycling the uncontaminated condensate stream to the steam reforming system as make up for the uncontaminated superheated steam stream; and

- combining at least part of the combined superheated steam stream with a hydrocarbon containing stream to form a hydrocarbon steam containing process stream as a feed to the steam reformer.

The Examiner relies on the following prior art references as evidence of unpatentability:

Tegge	3,642,731	Feb. 15, 1972
Schunck	GB 2006814A	May 10, 1979
Wasala	4,193,776	Mar. 18, 1980
Dickinson	4,377,066	Mar. 22, 1983
Roensch	4,464,228	Aug. 7, 1984
Erickson	4,846,240	Jul. 11, 1989
Drnevich	US 2003/0110693 A1	Jun. 19, 2003

The rejections on appeal are as follows:

1. Claims 1, 2, 4, and 8 are rejected under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala and Roensch.
2. Claim 3 is rejected under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala, Roensch, and Tegge.
3. Claim 5 is rejected under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala, Roensch, and Erickson.
4. Claims 6 and 7 are rejected under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala, Roensch, Erickson, and Dickinson.
5. Claims 6 and 7 are rejected under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala, Roensch, Erickson and Drnevich.

The Examiner finds that Schunck discloses the claim 1 feature “combining a second part of the uncontaminated superheated steam stream with the contaminated superheated steam stream to form a combined superheated steam stream” because heated condensate flowing from moistener column 9 to heat exchanger 17 and then to reformer 3 is combined with part of the uncontaminated steam before entering reactor 3 (Ans. 4).

Appellants argue that Schunck superheats the combined natural gas and contaminated steam stream, which does not constitute a contaminated steam stream (App. Br. 14). Appellants contend that the point at which uncontaminated steam stream 2 is combined with the combined natural gas and contaminated steam stream, there no longer exists a contaminated superheated steam stream (i.e., only a combined natural gas (hydrocarbon) and contaminated superheated steam stream would exist) (App. Br. 14).

### ISSUE

Did Appellants show that the Examiner reversibly erred in finding that Schunck discloses “combining a second part of the uncontaminated superheated steam stream with the contaminated superheated steam stream to form a combined superheated steam stream” that subsequently is combined with a hydrocarbon containing stream as recited in method claim 1? We answer this question in the affirmative.

### FACTUAL FINDINGS (FF)

1. Claim 1 recites, in relevant part, “combining a second part of the uncontaminated superheated steam stream with the contaminated superheated steam stream to form a combined superheated steam stream”, and “combining at least a part of the combined superheated steam stream with a hydrocarbon containing stream to form a hydrocarbon steam containing process stream as a feed to the steam reformer” (claim 1).
2. Schunck discloses that the process condensate (i.e., the contaminated process condensate) is heated by the heat of the gaseous feedstock

- (i.e., natural gas) via heat exchanger 15, which is then fed to the moistener column 9 to saturate the gaseous feedstock (1: 104-112; 2:21-30).
3. Schunck discloses that the heat exchanger 17 heats the moistened gaseous feedstock with superheated steam (2:31-35). In other words, the heat exchanger 17 forms a combined contaminated superheated steam and gaseous feedstock (i.e., natural gas) stream.
  4. Schunck discloses that only a stoichiometric amount of steam (i.e., uncontaminated steam) required for the reaction in reactor 3 is added to the moistened gaseous feedstock via line 2 (1: 112-118). In other words, uncontaminated steam is added to the combined superheated contaminated steam and gaseous feedstock.

#### PRINCIPLES OF LAW

For a prima facie case of obviousness all the claim features must be taught or suggested by the applied prior art. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974).

#### ANALYSIS

Method claim 1 plainly recites that a second part of the uncontaminated superheated steam stream is combined with the contaminated superheated steam stream to form a combined superheated steam stream, which is subsequently combined with the hydrocarbon containing stream (FF 1).

In contrast, Schunck discloses forming a combined superheated gaseous feedstock (i.e., hydrocarbon) and contaminated steam stream, which is then combined with the superheated uncontaminated steam stream (FF 2-4). In other words, Schunck does not teach or suggest forming a combined

superheated steam stream of contaminated and uncontaminated steam, which subsequently is combined with a hydrocarbon containing stream as required by the method of claim 1.

Because all the claim features of the sole independent claim are not taught or suggested by Schunck as found by the Examiner (Ans. 4), we reverse all of the Examiner's § 103 rejections.

#### DECISION

We reverse the rejection of claims 1, 2, 4, and 8 under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala and Roensch.

We reverse the rejection of claim 3 under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala, Roensch, and Tegge.

We reverse the rejection of claim 5 under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala, Roensch, and Erickson.

We reverse the rejection of claims 6 and 7 under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala, Roensch, Erickson, and Dickinson.

We reverse the rejection of claims 6 and 7 under 35 U.S.C. § 103 as being unpatentable over Schunck in view of Wasala, Roensch, Erickson and Drnevich.

#### ORDER

The Examiner's decision is reversed.

#### REVERSED

Appeal 2008-4500  
Application 10/671,555

PRAXAIR, INC.  
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